

WO 99/53948

PCT/US99/08744

SEQUENCE LISTING

<110> Oregon State University

<120> Methods of use for infection-specific INCA, INCB, and
INCC proteins of Chlamydia

<130> 52297

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<150> 60/082,588

<151> 1998-04-21

<150> 60/082,438

<151> 1998-04-20

<150> 60/086,450

<151> 1998-05-22

<160> 24

<170> PatentIn Ver. 2.0

<210> 1

<211> 534

<212> DNA

<213> Chlamydia trachomatis

<220>

<221> CDS

<222> (1)..(534)

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Thr	Phe	Ala	Ala	Asn	Ser	Thr	Gly	Thr	Ile	Gly	Ile	Val	Asn	Leu	Arg	
			20					25					30			

cgc	tgc	cta	gaa	gag	tct	gct	ctt	ggg	aaa	aaa	gaa	tct	gct	gaa	ttc	144
Arg	Cys	Leu	Glu	Glu	Ser	Ala	Leu	Gly	Lys	Lys	Glu	Ser	Ala	Glu	Phe	
		35					40					45				

gaa	aag	atg	aaa	aac	caa	ttc	tct	aac	agc	atg	ggg	aag	atg	gag	gaa	192
Glu	Lys	Met	Lys	Asn	Gln	Phe	Ser	Asn	Ser	Met	Gly	Lys	Met	Glu	Glu	
	50					55					60					

gaa	ctg	tct	tct	atc	tat	tcc	aag	ctc	caa	gac	gac	gat	tac	atg	gaa	240
Glu	Leu	Ser	Ser	Ile	Tyr	Ser	Lys	Leu	Gln	Asp	Asp	Asp	Tyr	Met	Glu	
65					70				75					80		

ggc	cta	tcc	gag	acc	gca	gct	gcc	gaa	tta	aga	aaa	aaa	ttc	gaa	gat	288
Gly	Leu	Ser	Glu	Thr	Ala	Ala	Ala	Glu	Leu	Arg	Lys	Lys	Phe	Glu	Asp	
				85				90					95			

cta	tct	gca	gaa	tac	aac	aca	gct	caa	ggg	cag	tat	tac	caa	ata	tta	336
Leu	Ser	Ala	Glu	Tyr	Asn	Thr	Ala	Gln	Gly	Gln	Tyr	Tyr	Gln	Ile	Leu	

100	105	110	
aac caa agt aat ttc aag cgc atg caa aag att atg gaa gaa gtg aaa			384
Asn Gln Ser Asn Phe Lys Arg Met Gln Lys Ile Met Glu Glu Val Lys			
115	120	125	
aaa gct tct gaa act gtg cgt att caa gaa ggc ttg tca gtc ctt ctt			432
Lys Ala Ser Glu Thr Val Arg Ile Gln Glu Gly Leu Ser Val Leu Leu			
130	135	140	
aac gaa gat att gtc tta tct atc gat agt tcg gca gat aaa acc gat			480
Asn Glu Asp Ile Val Leu Ser Ile Asp Ser Ser Ala Asp Lys Thr Asp			
145	150	155	160
gct gtt att aaa gtt ctt gat gtt ctt ttc aaa ata att aac atg cga			528
Ala Val Ile Lys Val Leu Asp Val Leu Phe Lys Ile Ile Asn Met Arg			
165	170	175	
agc tag			534
Ser			

<210> 2

<211> 177

<212> PRT

<213> Chlamydia trachomatis

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Arg Cys Leu Glu Glu Ser Ala Leu Gly Lys Lys Glu Ser Ala Glu Phe	
35 40 45	
Glu Lys Met Lys Asn Gln Phe Ser Asn Ser Met Gly Lys Met Glu Glu	
50 55 60	
Glu Leu Ser Ser Ile Tyr Ser Lys Leu Gln Asp Asp Asp Tyr Met Glu	
65 70 75 80	
Gly Leu Ser Glu Thr Ala Ala Ala Glu Leu Arg Lys Lys Phe Glu Asp	
85 90 95	
Leu Ser Ala Glu Tyr Asn Thr Ala Gln Gly Gln Tyr Tyr Gln Ile Leu	
100 105 110	
Asn Gln Ser Asn Phe Lys Arg Met Gln Lys Ile Met Glu Glu Val Lys	
115 120 125	
Lys Ala Ser Glu Thr Val Arg Ile Gln Glu Gly Leu Ser Val Leu Leu	
130 135 140	
Asn Glu Asp Ile Val Leu Ser Ile Asp Ser Ser Ala Asp Lys Thr Asp	
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Ser

<210> 3

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<212> DNA

<213> Chlamydia trachomatis

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<221> CDS

<222> (1)..(846)

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gtc aag aat att gtt ctg att gat gga gcg att gat cct cat tca tat	96
Val Lys Asn Ile Val Leu Ile Asp Gly Ala Ile Asp Pro His Ser Tyr	
20 25 30	
gag atg gtg aag ggg gat gaa gac cga atg gct atg agc cag ctg att	144
Glu Met Val Lys Gly Asp Glu Asp Arg Met Ala Met Ser Gln Leu Ile	
35 40 45	
ttt tgc aat ggt tta ggt tta gag cat tca gct agt tta cgt aaa cat	192
Phe Cys Asn Gly Leu Gly Leu Glu His Ser Ala Ser Leu Arg Lys His	
50 55 60	
cta gag ggt aac cca aaa gtc gtt gat tta ggt caa cgt ttg ctt aac	240
Leu Glu Gly Asn Pro Lys Val Val Asp Leu Gly Gln Arg Leu Leu Asn	
65 70 75 80	
aaa aac tgt ttt gat ctt ctg agt gaa gaa gga ttc cct gac cca cat	288
Lys Asn Cys Phe Asp Leu Leu Ser Glu Glu Gly Phe Pro Asp Pro His	
85 90 95	
att tgg acg gat atg aga gta tgg ggt gct gct gta aaa gag atg gct	336
Ile Trp Thr Asp Met Arg Val Trp Gly Ala Ala Val Lys Glu Met Ala	
100 105 110	
gcg gca tta att caa caa ttt cct caa tat gaa gaa gat ttt caa aag	384
Ala Ala Leu Ile Gln Gln Phe Pro Gln Tyr Glu Glu Asp Phe Gln Lys	
115 120 125	
aat gcg gat cag atc tta tca gag atg gag gaa ctt gat cgt tgg gca	432
Asn Ala Asp Gln Ile Leu Ser Glu Met Glu Glu Leu Asp Arg Trp Ala	
130 135 140	
gtg cgt tct ctc tct acg att cct gaa aaa aat cgc tat tta gtc aca	480
Val Arg Ser Leu Ser Thr Ile Pro Glu Lys Asn Arg Tyr Leu Val Thr	
145 150 155 160	
ggc cac aat gcg ttc agt tac ttt act cgt cgg tat cta tcc tct gat	528
Gly His Asn Ala Phe Ser Tyr Phe Thr Arg Arg Tyr Leu Ser Ser Asp	
165 170 175	
gcg gag aga gtg tct ggg gaa tgg aga tcg cgt tgc att tct cca gaa	576
Ala Glu Arg Val Ser Gly Glu Trp Arg Ser Arg Cys Ile Ser Pro Glu	
180 185 190	

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ggg ttg tct cct gag gct cag att agt atc cga gat att atg cgt gta 624
Gly Leu Ser Pro Glu Ala Gln Ile Ser Ile Arg Asp Ile Met Arg Val
      195                      200                      205

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Val Glu Tyr Ile Ser Ala Asn Asp Val Glu Val Val Phe Leu Glu Asp
      210                      215                      220

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acg tta aat caa gat gct ttg aga aag att gtt tct tgc tct aag agc 720
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gga caa aag att cgt ctc gct aag tct cct tta tat agc gat aat gtc 768
Gly Gln Lys Ile Arg Leu Ala Lys Ser Pro Leu Tyr Ser Asp Asn Val
      245                      250                      255

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tgt gat aac tat ttt agc acg ttc cag cac aat gtt cgc aca att aca 816
Cys Asp Asn Tyr Phe Ser Thr Phe Gln His Asn Val Arg Thr Ile Thr
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<213> Chlamydia trachomatis

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      20          25          30

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Glu Met Val Lys Gly Asp Glu Asp Arg Met Ala Met Ser Gln Leu Ile
      35          40          45

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Phe Cys Asn Gly Leu Gly Leu Glu His Ser Ala Ser Leu Arg Lys His
      50          55          60

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Leu Glu Gly Asn Pro Lys Val Val Asp Leu Gly Gln Arg Leu Leu Asn
      65          70          75          80

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Lys Asn Cys Phe Asp Leu Leu Ser Glu Glu Gly Phe Pro Asp Pro His
      85          90          95

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Ile Trp Thr Asp Met Arg Val Trp Gly Ala Ala Val Lys Glu Met Ala
      100          105          110

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Ala Ala Leu Ile Gln Gln Phe Pro Gln Tyr Glu Glu Asp Phe Gln Lys
      115          120          125

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Asn Ala Asp Gln Ile Leu Ser Glu Met Glu Glu Leu Asp Arg Trp Ala
      130          135          140

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Val Arg Ser Leu Ser Thr Ile Pro Glu Lys Asn Arg Tyr Leu Val Thr
      145          150          155          160

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Gly His Asn Ala Phe Ser Tyr Phe Thr Arg Arg Tyr Leu Ser Ser Asp
 165 170 175

Ala Glu Arg Val Ser Gly Glu Trp Arg Ser Arg Cys Ile Ser Pro Glu
 180 185 190

Gly Leu Ser Pro Glu Ala Gln Ile Ser Ile Arg Asp Ile Met Arg Val
 195 200 205

Val Glu Tyr Ile Ser Ala Asn Asp Val Glu Val Val Phe Leu Glu Asp
 210 215 220

Thr Leu Asn Gln Asp Ala Leu Arg Lys Ile Val Ser Cys Ser Lys Ser
 225 230 235 240

Gly Gln Lys Ile Arg Leu Ala Lys Ser Pro Leu Tyr Ser Asp Asn Val
 245 250 255

Cys Asp Asn Tyr Phe Ser Thr Phe Gln His Asn Val Arg Thr Ile Thr
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Glu Glu Leu Gly Gly Thr Val Leu Glu
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<210> 5
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 <213> Chlamydia trachomatis

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 <222> (1)..(861)

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tta cag aag aat tgg gag gga ctg ttc ttg aat aga gat aat gca att 96
 Leu Gln Lys Asn Trp Glu Gly Leu Phe Leu Asn Arg Asp Asn Ala Ile
 20 25 30

gct tgg tcc gta gag gat ctt tgt gtt aat tat gat cac tca gac gtc 144
 Ala Trp Ser Val Glu Asp Leu Cys Val Asn Tyr Asp His Ser Asp Val
 35 40 45

tta tgt cac att act ttt tct ctg cct gca ggg gca atg gct gct att 192
 Leu Cys His Ile Thr Phe Ser Leu Pro Ala Gly Ala Met Ala Ala Ile
 50 55 60

att ggg ccg aat gga gct ggt aaa agt act ttg ctt aag gct tct tta 240
 Ile Gly Pro Asn Gly Ala Gly Lys Ser Thr Leu Leu Lys Ala Ser Leu
 65 70 75 80

gga ctg att cgt gct tct tct ggc caa agc ttg ttc ttt ggt cag aga 288
 Gly Leu Ile Arg Ala Ser Ser Gly Gln Ser Leu Phe Phe Gly Gln Arg
 85 90 95

ttt tcc aag gca cat cat aga ata gcc tat atg cct caa aga gcg agt 336
 Phe Ser Lys Ala His His Arg Ile Ala Tyr Met Pro Gln Arg Ala Ser

	100	105	110	
gtg gat tgg gat ttc cca atg act gtt ctt gat ctc gtg ttg atg ggg				384
Val Asp Trp Asp Phe Pro Met Thr Val Leu Asp Leu Val Leu Met Gly				
	115	120	125	
tgt tac ggc tat aaa gga ata tgg aat cgt att tcc act gat gat cgt				432
Cys Tyr Gly Tyr Lys Gly Ile Trp Asn Arg Ile Ser Thr Asp Asp Arg				
	130	135	140	
cag gag gct atg cgt att tta gag cgg gtt ggt ttg gaa gct ttt gca				480
Gln Glu Ala Met Arg Ile Leu Glu Arg Val Gly Leu Glu Ala Phe Ala				
	145	150	155	160
aat cgt caa ata ggt aag ctc tct gga gga caa caa cag aga gct ttt				528
Asn Arg Gln Ile Gly Lys Leu Ser Gly Gly Gln Gln Gln Arg Ala Phe				
	165	170	175	
tta gcg cgg tca tta atg caa aaa gca gat ttg tat ctc atg gat gag				576
Leu Ala Arg Ser Leu Met Gln Lys Ala Asp Leu Tyr Leu Met Asp Glu				
	180	185	190	
ctg ttc tct gcg atc gat atg gcc tct tat cag atg gtt gta gat gtt				624
Leu Phe Ser Ala Ile Asp Met Ala Ser Tyr Gln Met Val Val Asp Val				
	195	200	205	
ttg caa gag ctt aaa agc gaa ggg aag act att gtg gtc att cat cat				672
Leu Gln Glu Leu Lys Ser Glu Gly Lys Thr Ile Val Val Ile His His				
	210	215	220	
gat ttg agt aat gtc cgg aag ctt ttt gat cat gtg att tta tta aat				720
Asp Leu Ser Asn Val Arg Lys Leu Phe Asp His Val Ile Leu Leu Asn				
	225	230	235	240
aag cat ctt gtg tgc tct gga agc gta gaa gaa tgc ttg act aaa gaa				768
Lys His Leu Val Cys Ser Gly Ser Val Glu Glu Cys Leu Thr Lys Glu				
	245	250	255	
gcc att ttt cag gct tat ggg tgt gac ttg agc ttt tgg att aca cac				816
Ala Ile Phe Gln Ala Tyr Gly Cys Asp Leu Ser Phe Trp Ile Thr His				
	260	265	270	
tca aat tgt cta gag gca agt acc aag gat cgt gct aga tgc tga				861
Ser Asn Cys Leu Glu Ala Ser Thr Lys Asp Arg Ala Arg Cys				
	275	280	285	

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<211> 286

<212> PRT

<213> Chlamydia trachomatis

<400> 6

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		20					25						30		

Ala	Trp	Ser	Val	Glu	Asp	Leu	Cys	Val	Asn	Tyr	Asp	His	Ser	Asp	Val
		35					40					45			

Leu Cys His Ile Thr Phe Ser Leu Pro Ala Gly Ala Met Ala Ala Ile
 50 55 60
 Ile Gly Pro Asn Gly Ala Gly Lys Ser Thr Leu Leu Lys Ala Ser Leu
 65 70 75 80
 Gly Leu Ile Arg Ala Ser Ser Gly Gln Ser Leu Phe Phe Gly Gln Arg
 85 90 95
 Phe Ser Lys Ala His His Arg Ile Ala Tyr Met Pro Gln Arg Ala Ser
 100 105 110
 Val Asp Trp Asp Phe Pro Met Thr Val Leu Asp Leu Val Leu Met Gly
 115 120 125
 Cys Tyr Gly Tyr Lys Gly Ile Trp Asn Arg Ile Ser Thr Asp Asp Arg
 130 135 140
 Gln Glu Ala Met Arg Ile Leu Glu Arg Val Gly Leu Glu Ala Phe Ala
 145 150 155 160
 Asn Arg Gln Ile Gly Lys Leu Ser Gly Gly Gln Gln Gln Arg Ala Phe
 165 170 175
 Leu Ala Arg Ser Leu Met Gln Lys Ala Asp Leu Tyr Leu Met Asp Glu
 180 185 190
 Leu Phe Ser Ala Ile Asp Met Ala Ser Tyr Gln Met Val Val Asp Val
 195 200 205
 Leu Gln Glu Leu Lys Ser Glu Gly Lys Thr Ile Val Val Ile His His
 210 215 220
 Asp Leu Ser Asn Val Arg Lys Leu Phe Asp His Val Ile Leu Leu Asn
 225 230 235 240
 Lys His Leu Val Cys Ser Gly Ser Val Glu Glu Cys Leu Thr Lys Glu
 245 250 255
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 260 265 270
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 275 280 285

<210> 7

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<213> Chlamydia psittaci

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<222> (1)..(1068)

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tca cct act ttt gga gat cat ggt aag gat ttc gac aac aat aaa att	96
Ser Pro Thr Phe Gly Asp His Gly Lys Asp Phe Asp Asn Asn Lys Ile	
20 25 30	
ata ccc att tca ata gaa gct cca act tct tca gct gct gct gta ggg	144
Ile Pro Ile Ser Ile Glu Ala Pro Thr Ser Ser Ala Ala Ala Val Gly	
35 40 45	
gct aaa acg gct atc gag cct gaa gga aga agc cca cta ctt caa agg	192
Ala Lys Thr Ala Ile Glu Pro Glu Gly Arg Ser Pro Leu Leu Gln Arg	
50 55 60	
att tgc tat ctt gtt aaa att atc gct gcc atc gcc ctc ttt gtt gtt	240
Ile Cys Tyr Leu Val Lys Ile Ile Ala Ala Ile Ala Leu Phe Val Val	
65 70 75 80	
ggt atc gca gcc tta gtt tgc tta tat ctc ggt agc gtt atc tca acg	288
Gly Ile Ala Ala Leu Val Cys Leu Tyr Leu Gly Ser Val Ile Ser Thr	
85 90 95	
cct tct ctt att ctt atg ctt gcg atc atg ctt gta tcc ttt gtg atc	336
Pro Ser Leu Ile Leu Met Leu Ala Ile Met Leu Val Ser Phe Val Ile	
100 105 110	
ggt att acg gca att cga gat ggc aca ccg tct caa gtg gtc cgt cac	384
Val Ile Thr Ala Ile Arg Asp Gly Thr Pro Ser Gln Val Val Arg His	
115 120 125	
atg aaa cag caa att cag caa ttt ggc gaa gaa aac acg cgt tta cat	432
Met Lys Gln Gln Ile Gln Gln Phe Gly Glu Glu Asn Thr Arg Leu His	
130 135 140	
acc gca gta gaa aat cta aaa gct gtt aac gtt gag ctc tca gag caa	480
Thr Ala Val Glu Asn Leu Lys Ala Val Asn Val Glu Leu Ser Glu Gln	
145 150 155 160	
att aac caa ctt aaa caa cta cat act aga tta tcg gat ttt ggt gat	528
Ile Asn Gln Leu Lys Gln Leu His Thr Arg Leu Ser Asp Phe Gly Asp	
165 170 175	
agg ctt gaa gcg aat acc ggt gat ttt act gca ctt att gcg gat ttc	576
Arg Leu Glu Ala Asn Thr Gly Asp Phe Thr Ala Leu Ile Ala Asp Phe	
180 185 190	
caa ctc agt ctg gaa gag ttt aag tct gtt ggt act aaa gtt gaa acc	624
Gln Leu Ser Leu Glu Glu Phe Lys Ser Val Gly Thr Lys Val Glu Thr	
195 200 205	
atg ctc tct cca ttt gag aaa tta gct cag tct ttg aaa gag acc ttt	672
Met Leu Ser Pro Phe Glu Lys Leu Ala Gln Ser Leu Lys Glu Thr Phe	
210 215 220	
tct caa gaa gct gtt cag gca atg atg tcc tct gta act gag tta aga	720
Ser Gln Glu Ala Val Gln Ala Met Met Ser Ser Val Thr Glu Leu Arg	
225 230 235 240	
acc aat ttg aat gca ttg aaa gag ctt ata aca gag aat aaa acc gta	768
Thr Asn Leu Asn Ala Leu Lys Glu Leu Ile Thr Glu Asn Lys Thr Val	
245 250 255	
ata gag caa cta aaa gct gat gct caa ctt aga gaa gag caa gtg cgg	816


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Ile Glu Gln Leu Lys Ala Asp Ala Gln Leu Arg Glu Glu Gln Val Arg
      260                      265                      270

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Phe Leu Glu Lys Arg Lys Gln Glu Leu Glu Glu Ala Cys Ser Thr Leu
      275                      280                      285

tcc cat tca att gcg act cta cag gaa tcc aca acc ctt cta aag gac      912
Ser His Ser Ile Ala Thr Leu Gln Glu Ser Thr Thr Leu Leu Lys Asp
      290                      295                      300

tct aca act aac tta cat gca gtt gaa agt cgt ctt atc ggt gtt atg      960
Ser Thr Thr Asn Leu His Ala Val Glu Ser Arg Leu Ile Gly Val Met
      305                      310                      315

gtt cag gat ggt gca gag tcc tcc acc gta gag gaa gct tca caa gat      1008
Val Gln Asp Gly Ala Glu Ser Ser Thr Val Glu Glu Ala Ser Gln Asp
      325                      330                      335

gat agc gcg caa ccc caa gat gaa aat caa tct gat gct gga gag cat      1056
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      340                      345                      350

aaa gat agt taa
Lys Asp Ser
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<210> 8
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<212> PRT
<213> Chlamydia psittaci

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      20                      25                      30

Ile Pro Ile Ser Ile Glu Ala Pro Thr Ser Ser Ala Ala Ala Val Gly
      35                      40                      45

Ala Lys Thr Ala Ile Glu Pro Glu Gly Arg Ser Pro Leu Leu Gln Arg
      50                      55                      60

Ile Cys Tyr Leu Val Lys Ile Ile Ala Ala Ile Ala Leu Phe Val Val
      65                      70                      75                      80

Gly Ile Ala Ala Leu Val Cys Leu Tyr Leu Gly Ser Val Ile Ser Thr
      85                      90                      95

Pro Ser Leu Ile Leu Met Leu Ala Ile Met Leu Val Ser Phe Val Ile
      100                      105                      110

Val Ile Thr Ala Ile Arg Asp Gly Thr Pro Ser Gln Val Val Arg His
      115                      120                      125

Met Lys Gln Gln Ile Gln Gln Phe Gly Glu Glu Asn Thr Arg Leu His
      130                      135                      140

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Thr Ala Val Glu Asn Leu Lys Ala Val Asn Val Glu Leu Ser Glu Gln
145 150 155 160

Ile Asn Gln Leu Lys Gln Leu His Thr Arg Leu Ser Asp Phe Gly Asp
165 170 175

Arg Leu Glu Ala Asn Thr Gly Asp Phe Thr Ala Leu Ile Ala Asp Phe
180 185 190

Gln Leu Ser Leu Glu Glu Phe Lys Ser Val Gly Thr Lys Val Glu Thr
195 200 205

Met Leu Ser Pro Phe Glu Lys Leu Ala Gln Ser Leu Lys Glu Thr Phe
210 215 220

Ser Gln Glu Ala Val Gln Ala Met Met Ser Ser Val Thr Glu Leu Arg
225 230 235 240

Thr Asn Leu Asn Ala Leu Lys Glu Leu Ile Thr Glu Asn Lys Thr Val
245 250 255

Ile Glu Gln Leu Lys Ala Asp Ala Gln Leu Arg Glu Glu Gln Val Arg
260 265 270

Phe Leu Glu Lys Arg Lys Gln Glu Leu Glu Glu Ala Cys Ser Thr Leu
275 280 285

Ser His Ser Ile Ala Thr Leu Gln Glu Ser Thr Thr Leu Leu Lys Asp
290 295 300

Ser Thr Thr Asn Leu His Ala Val Glu Ser Arg Leu Ile Gly Val Met
305 310 315 320

Val Gln Asp Gly Ala Glu Ser Ser Thr Val Glu Glu Ala Ser Gln Asp
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Asp Ser Ala Gln Pro Gln Asp Glu Asn Gln Ser Asp Ala Gly Glu His
340 345 350

Lys Asp Ser
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<212> DNA
<213> Chlamydia psittaci

<220>
<221> CDS
<222> (1)..(597)

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Asp Val Leu Ile Ala Phe Asn Arg Lys Leu Asn Leu Val Glu Gln Gln
20 25 30

gcg aaa gaa ctt gaa acg aaa gtc agt ttg gta gac aga aca gct act 144
 Ala Lys Glu Leu Glu Thr Lys Val Ser Leu Val Asp Arg Thr Ala Thr
 35 40 45

tta tca ctt acc act ggc aat aat gta gcc acg gat gta ctc ctt tta 192
 Leu Ser Leu Thr Thr Gly Asn Asn Val Ala Thr Asp Val Leu Leu Leu
 50 55 60

aaa gat gag gtt gca gaa cta aaa gga tgt ttg tct gca gtt acg gat 240
 Lys Asp Glu Val Ala Glu Leu Lys Gly Cys Leu Ser Ala Val Thr Asp
 65 70 75 80

cta tta atc cgc tca ggc tca tca aga aca cct ggg ggt gct cct aat 288
 Leu Leu Ile Arg Ser Gly Ser Ser Arg Thr Pro Gly Gly Ala Pro Asn
 85 90 95

cca gaa ggc act aat tac cta ata gga tgc aca cct cct tct ctt tgc 336
 Pro Glu Gly Thr Asn Tyr Leu Ile Gly Cys Thr Pro Pro Ser Leu Cys
 100 105 110

gct aaa ctt aca gcg tta gcg tta aca att ata gcc ctc att gct atc 384
 Ala Lys Leu Thr Ala Leu Ala Leu Thr Ile Ile Ala Leu Ile Ala Ile
 115 120 125

aca gta ctt gtt atc tgt att gtt act gtt tgc gcc ggt ttc ccc cta 432
 Thr Val Leu Val Ile Cys Ile Val Thr Val Cys Gly Gly Phe Pro Leu
 130 135 140

ttt att tcc cta ctc aac atg tac aca gtt ggt gct tgt ata tcc tta 480
 Phe Ile Ser Leu Leu Asn Met Tyr Thr Val Gly Ala Cys Ile Ser Leu
 145 150 155 160

ccg atc att tcg tgt gcc gca gtt tca atg atg att cta tgc tca cat 528
 Pro Ile Ile Ser Cys Ala Ala Val Ser Met Met Ile Leu Cys Ser His
 165 170 175

tct att aac tct tta tta aga aac agg cct gcg atc tat atg act aac 576
 Ser Ile Asn Ser Leu Leu Arg Asn Arg Pro Ala Ile Tyr Met Thr Asn
 180 185 190

aat ttt caa aca gaa tct taa 597
 Asn Phe Gln Thr Glu Ser
 195

<210> 10

<211> 198

<212> PRT

<213> Chlamydia psittaci

<400> 10

Met Ser Thr Thr Pro Ala Ser Ser Ala Ser Arg Asp Val Leu Leu Asp
 1 5 10 15

Asp Val Leu Ile Ala Phe Asn Arg Lys Leu Asn Leu Val Glu Gln Gln
 20 25 30

Ala Lys Glu Leu Glu Thr Lys Val Ser Leu Val Asp Arg Thr Ala Thr
 35 40 45

Leu Ser Leu Thr Thr Gly Asn Asn Val Ala Thr Asp Val Leu Leu Leu

50 55 60
 Lys Asp Glu Val Ala Glu Leu Lys Gly Cys Leu Ser Ala Val Thr Asp
 65 70 75 80
 Leu Leu Ile Arg Ser Gly Ser Ser Arg Thr Pro Gly Gly Ala Pro Asn
 85 90 95
 Pro Glu Gly Thr Asn Tyr Leu Ile Gly Cys Thr Pro Pro Ser Leu Cys
 100 105 110
 Ala Lys Leu Thr Ala Leu Ala Leu Thr Ile Ile Ala Leu Ile Ala Ile
 115 120 125
 Thr Val Leu Val Ile Cys Ile Val Thr Val Cys Gly Gly Phe Pro Leu
 130 135 140
 Phe Ile Ser Leu Leu Asn Met Tyr Thr Val Gly Ala Cys Ile Ser Leu
 145 150 155 160
 Pro Ile Ile Ser Cys Ala Ala Val Ser Met Met Ile Leu Cys Ser His
 165 170 175
 Ser Ile Asn Ser Leu Leu Arg Asn Arg Pro Ala Ile Tyr Met Thr Asn
 180 185 190
 Asn Phe Gln Thr Glu Ser
 195

<210> 11
 <211> 561
 <212> DNA
 <213> Chlamydia psittaci

<220>
 <221> CDS
 <222> (1)..(561)

<400> 11
 atg acc tct gta aga acc gat tta act cca ggc gac acc tca ctc caa 48
 Met Thr Ser Val Arg Thr Asp Leu Thr Pro Gly Asp Thr Ser Leu Gln
 1 5 10 15
 tct tct tta tta aat ccg agt gat ctc aca aca caa cta tcc aac ctc 96
 Ser Ser Leu Leu Asn Pro Ser Asp Leu Thr Thr Gln Leu Ser Asn Leu
 20 25 30
 cag act gtt ctc gca ggg ata caa caa caa cat cct tta aac ggt ggt 144
 Gln Thr Val Leu Ala Gly Ile Gln Gln Gln His Pro Leu Asn Gly Gly
 35 40 45
 tgg cct cag cat cat cct act ggc gct gca gat caa aat tat ctc atg 192
 Trp Pro Gln His His Pro Thr Gly Ala Ala Asp Gln Asn Tyr Leu Met
 50 55 60
 cgt ctg atg caa tct cat atg gca agt acc gta tca gca gta tct gaa 240
 Arg Leu Met Gln Ser His Met Ala Ser Thr Val Ser Ala Val Ser Glu
 65 70 75 80
 tta aga acc gaa gtc act gca atc aag aca aaa ttg cac ggg cta tct 288

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<210> 12
<211> 186
<212> PRT
<213> Chlamydia psittaci
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<400> 12

Met Thr Ser Val Arg Thr Asp Leu Thr Pro Gly Asp Thr Ser Leu Gln
1 5 10 15

Ser Ser Leu Leu Asn Pro Ser Asp Leu Thr Thr Gln Leu Ser Asn Leu
20 25 30

Gln Thr Val Leu Ala Gly Ile Gln Gln Gln His Pro Leu Asn Gly Gly
35 40 45

Trp Pro Gln His His Pro Thr Gly Ala Ala Asp Gln Asn Tyr Leu Met
50 55 60

Arg Leu Met Gln Ser His Met Ala Ser Thr Val Ser Ala Val Ser Glu
65 70 75 80

Leu Arg Thr Glu Val Thr Ala Ile Lys Thr Lys Leu His Gly Leu Ser
85 90 95

Thr Pro Ala Asn Val Cys Ser Gly Pro Met Ala Leu Ala Ala Phe Leu
100 105 110

Leu Ala Ile Ser Leu Val Ala Ile Ile Ile Ile Val Leu Ala Ser Leu
115 120 125

Gly Leu Ala Gly Ile Leu Pro Gln Ala Ala Ala Ile Leu Val Asn Thr
130 135 140

Ala Asn Ser Ile Trp Ala Ile Val Ser Ala Ser Ile Val Thr Val Ile
145 150 155 160

Cys Leu Ile Ser Val Leu Cys Ile Thr Leu Ile Arg His His Lys Pro
165 170 175

Leu Pro Ile Glu Thr Arg Pro Thr Gly His
180 185

<210> 13

<211> 822

<212> DNA

<213> Chlamydia trachomatis

<220>

<221> CDS

<222> (1)..(822)

<400> 13

atg aca acg cct act cta atc gtg att cct cca tct ccc cct gca cct 48
Met Thr Thr Pro Thr Leu Ile Val Ile Pro Pro Ser Pro Pro Ala Pro
1 5 10 15

tcc tac tca gcc aat cgc gta cct caa cct tct ttg atg gac aaa att 96
Ser Tyr Ser Ala Asn Arg Val Pro Gln Pro Ser Leu Met Asp Lys Ile
20 25 30

aag aaa ata gca gcc att gcc tcc cta att ctt ata ggc aca ata ggc 144
Lys Lys Ile Ala Ala Ile Ala Ser Leu Ile Leu Ile Gly Thr Ile Gly
35 40 45

ttt tta gct ctt ttg gga cat ctt gtt ggc ttt ctg atc gct cca caa 192
Phe Leu Ala Leu Leu Gly His Leu Val Gly Phe Leu Ile Ala Pro Gln
50 55 60

atc act att gtt ctt ctt gcc cta ttc att acc tca tta gca ggg aat 240
Ile Thr Ile Val Leu Leu Ala Leu Phe Ile Thr Ser Leu Ala Gly Asn
65 70 75 80

gct ctt tat cta cag aaa acc gct aat cta cat cta tac cag gat ctg 288
Ala Leu Tyr Leu Gln Lys Thr Ala Asn Leu His Leu Tyr Gln Asp Leu
85 90 95

caa aga gaa gtt ggg tct cta aaa gaa att aat ttc atg ctg agc gtt 336
Gln Arg Glu Val Gly Ser Leu Lys Glu Ile Asn Phe Met Leu Ser Val
100 105 110

cta cag aaa gaa ttt ctt cat tta tct aaa gaa ttt gca acg aca tct 384
Leu Gln Lys Glu Phe Leu His Leu Ser Lys Glu Phe Ala Thr Thr Ser
115 120 125

aaa gac ctc tct gct gta tct caa gat ttt tat tct tgt ttg caa gga 432
Lys Asp Leu Ser Ala Val Ser Gln Asp Phe Tyr Ser Cys Leu Gln Gly
130 135 140

ttt aga gat aac tat aaa ggt ttt gaa tct ctt ttg gat gag tat aaa 480
Phe Arg Asp Asn Tyr Lys Gly Phe Glu Ser Leu Leu Asp Glu Tyr Lys
145 150 155 160

aac tct aca gaa gaa atg cgc aaa ctc ttt tcg caa gaa atc ata gca 528

Asn	Ser	Thr	Glu	Glu	Met	Arg	Lys	Leu	Phe	Ser	Gln	Glu	Ile	Ile	Ala		
				165					170					175			
gat	ctt	aaa	ggc	tct	gtt	gcc	tca	tta	aga	gag	gaa	atc	cga	ttc	cta	576	
Asp	Leu	Lys	Gly	Ser	Val	Ala	Ser	Leu	Arg	Glu	Glu	Ile	Arg	Phe	Leu		
			180					185					190				
acc	cca	tta	gca	gaa	gaa	gtt	cgc	cga	tta	gcg	cat	aac	cag	gaa	tca	624	
Thr	Pro	Leu	Ala	Glu	Glu	Val	Arg	Arg	Leu	Ala	His	Asn	Gln	Glu	Ser		
		195					200					205					
tta	aca	gcg	gct	att	gaa	gaa	tta	aaa	aca	att	cgt	gat	agc	tta	cga	672	
Leu	Thr	Ala	Ala	Ile	Glu	Glu	Leu	Lys	Thr	Ile	Arg	Asp	Ser	Leu	Arg		
	210					215					220						
gat	gaa	att	gga	caa	ctt	tca	caa	ctt	tct	aaa	act	ctt	acc	agt	caa	720	
Asp	Glu	Ile	Gly	Gln	Leu	Ser	Gln	Leu	Ser	Lys	Thr	Leu	Thr	Ser	Gln		
225					230				235						240		
att	gca	tta	caa	cga	aaa	gag	agc	tca	gat	ctg	tgt	tcc	cag	ata	aga	768	
Ile	Ala	Leu	Gln	Arg	Lys	Glu	Ser	Ser	Asp	Leu	Cys	Ser	Gln	Ile	Arg		
			245						250					255			
gag	acg	ctc	tcc	tcc	ccc	aga	aag	tct	gca	tca	ccc	tct	aca	aaa	agc	816	
Glu	Thr	Leu	Ser	Ser	Pro	Arg	Lys	Ser	Ala	Ser	Pro	Ser	Thr	Lys	Ser		
			260					265					270				
tcc	tag															822	
Ser																	

<210> 14

<211> 273

<212> PRT

<213> Chlamydia trachomatis

<400> 14

Met	Thr	Thr	Pro	Thr	Leu	Ile	Val	Ile	Pro	Pro	Ser	Pro	Pro	Ala	Pro		
1				5					10					15			
Ser	Tyr	Ser	Ala	Asn	Arg	Val	Pro	Gln	Pro	Ser	Leu	Met	Asp	Lys	Ile		
			20					25					30				
Lys	Lys	Ile	Ala	Ala	Ile	Ala	Ser	Leu	Ile	Leu	Ile	Gly	Thr	Ile	Gly		
		35					40					45					
Phe	Leu	Ala	Leu	Leu	Gly	His	Leu	Val	Gly	Phe	Leu	Ile	Ala	Pro	Gln		
	50					55					60						
Ile	Thr	Ile	Val	Leu	Leu	Ala	Leu	Phe	Ile	Thr	Ser	Leu	Ala	Gly	Asn		
65				70					75						80		
Ala	Leu	Tyr	Leu	Gln	Lys	Thr	Ala	Asn	Leu	His	Leu	Tyr	Gln	Asp	Leu		
				85				90						95			
Gln	Arg	Glu	Val	Gly	Ser	Leu	Lys	Glu	Ile	Asn	Phe	Met	Leu	Ser	Val		
			100					105					110				
Leu	Gln	Lys	Glu	Phe	Leu	His	Leu	Ser	Lys	Glu	Phe	Ala	Thr	Thr	Ser		
		115					120					125					

Lys Asp Leu Ser Ala Val Ser Gln Asp Phe Tyr Ser Cys Leu Gln Gly
 130 135 140
 Phe Arg Asp Asn Tyr Lys Gly Phe Glu Ser Leu Leu Asp Glu Tyr Lys
 145 150 155 160
 Asn Ser Thr Glu Glu Met Arg Lys Leu Phe Ser Gln Glu Ile Ile Ala
 165 170 175
 Asp Leu Lys Gly Ser Val Ala Ser Leu Arg Glu Glu Ile Arg Phe Leu
 180 185 190
 Thr Pro Leu Ala Glu Glu Val Arg Arg Leu Ala His Asn Gln Glu Ser
 195 200 205
 Leu Thr Ala Ala Ile Glu Glu Leu Lys Thr Ile Arg Asp Ser Leu Arg
 210 215 220
 Asp Glu Ile Gly Gln Leu Ser Gln Leu Ser Lys Thr Leu Thr Ser Gln
 225 230 235 240
 Ile Ala Leu Gln Arg Lys Glu Ser Ser Asp Leu Cys Ser Gln Ile Arg
 245 250 255
 Glu Thr Leu Ser Ser Pro Arg Lys Ser Ala Ser Pro Ser Thr Lys Ser
 260 265 270

Ser

<210> 15
 <211> 348
 <212> DNA
 <213> Chlamydia trachomatis

<220>
 <221> CDS
 <222> (1)..(348)

<400> 15
 atg gtt cat tct gta tac aat tca ttg gct cca gaa ggt ttt agc caa 48
 Met Val His Ser Val Tyr Asn Ser Leu Ala Pro Glu Gly Phe Ser Gln
 1 5 10 15
 gtc tct att caa ccc agt cag att cca acc agc aaa aaa gta atg att 96
 Val Ser Ile Gln Pro Ser Gln Ile Pro Thr Ser Lys Lys Val Met Ile
 20 25 30
 gcg ata atg act ctt ttt gca ctc aca gcc att gca gca ata gtc ctt 144
 Ala Ile Met Thr Leu Phe Ala Leu Thr Ala Ile Ala Ala Ile Val Leu
 35 40 45
 tcc atc gtt aca gtt tgt gga ggg ttt cct ttt ctt ctt gct gca ctt 192
 Ser Ile Val Thr Val Cys Gly Gly Phe Pro Phe Leu Leu Ala Ala Leu
 50 55 60
 aac acc gta act att ggt gca tgc gta tcc ttg ccg gta ttc act tgc 240
 Asn Thr Val Thr Ile Gly Ala Cys Val Ser Leu Pro Val Phe Thr Cys
 65 70 75 80
 ata gct aca acg tta tta ctt ctt tgt ctc cgt aat atc gaa ctc cta 288

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Ile Ala Thr Thr Leu Leu Leu Cys Leu Arg Asn Ile Glu Leu Leu
85 90 95
gcc aga ccg caa gta ttt acc ctc tcc act caa ttc agc cca aca aaa 336
Ala Arg Pro Gln Val Phe Thr Leu Ser Thr Gln Phe Ser Pro Thr Lys
100 105 110
cct caa gaa tag 348
Pro Gln Glu
115

<210> 16
<211> 115
<212> PRT
<213> Chlamydia trachomatis

<400> 16
Met Val His Ser Val Tyr Asn Ser Leu Ala Pro Glu Gly Phe Ser Gln
1 5 10 15
Val Ser Ile Gln Pro Ser Gln Ile Pro Thr Ser Lys Lys Val Met Ile
20 25 30
Ala Ile Met Thr Leu Phe Ala Leu Thr Ala Ile Ala Ala Ile Val Leu
35 40 45
Ser Ile Val Thr Val Cys Gly Gly Phe Pro Phe Leu Leu Ala Ala Leu
50 55 60
Asn Thr Val Thr Ile Gly Ala Cys Val Ser Leu Pro Val Phe Thr Cys
65 70 75 80
Ile Ala Thr Thr Leu Leu Leu Leu Cys Leu Arg Asn Ile Glu Leu Leu
85 90 95
Ala Arg Pro Gln Val Phe Thr Leu Ser Thr Gln Phe Ser Pro Thr Lys
100 105 110
Pro Gln Glu
115

<210> 17
<211> 537
<212> DNA
<213> Chlamydia trachomatis

<220>
<221> CDS
<222> (1)..(537)

<400> 17
atg acg tac tct ata tcc gat ata gca cac aaa tct gat att tct aat 48
Met Thr Tyr Ser Ile Ser Asp Ile Ala His Lys Ser Asp Ile Ser Asn
1 5 10 15
ccc acg tct ccc gct cca tca aga aaa cga gga tcc ttt ccc cca caa 96
Pro Thr Ser Pro Ala Pro Ser Arg Lys Arg Gly Ser Phe Pro Pro Gln
20 25 30

tct cct tct gcc gtg ggc tct tta gag gga gct aat ttc tct aca tgg 144
 Ser Pro Ser Ala Val Gly Ser Leu Glu Gly Ala Asn Phe Ser Thr Trp
 35 40 45

ggg cca ggc ccc ttc ttc act gtc cct gtt tat cca caa caa ctc gct 192
 Gly Pro Gly Pro Phe Phe Thr Val Pro Val Tyr Pro Gln Gln Leu Ala
 50 55 60

gca atg caa aac aac ctt ttt aca ttg caa aca gag gtt tct gct ctc 240
 Ala Met Gln Asn Asn Leu Phe Thr Leu Gln Thr Glu Val Ser Ala Leu
 65 70 75 80

aag aaa aaa tta gtt cag tct agt cag aca cgc gga tct tta gga ctc 288
 Lys Lys Lys Leu Val Gln Ser Ser Gln Thr Arg Gly Ser Leu Gly Leu
 85 90 95

ggc ccg cag ttt tta gcg gca tgc tta gtt gct gcg aca atc ctt gca 336
 Gly Pro Gln Phe Leu Ala Ala Cys Leu Val Ala Ala Thr Ile Leu Ala
 100 105 110

gta gct gtt atc gta ctt gct tcc tta gga ctt ggc ggt gtt ctt cct 384
 Val Ala Val Ile Val Leu Ala Ser Leu Gly Leu Gly Gly Val Leu Pro
 115 120 125

ttt gtc ctt gtt tgt ctg gct ggg tca act aat gca att tgg gct att 432
 Phe Val Leu Val Cys Leu Ala Gly Ser Thr Asn Ala Ile Trp Ala Ile
 130 135 140

gtg agc gcc tcc atc act aca ctg att tgt tgc gtt tcc atc gct tgc 480
 Val Ser Ala Ser Ile Thr Thr Leu Ile Cys Cys Val Ser Ile Ala Cys
 145 150 155 160

atc ttc tta gca aaa tgt gat aag gga tct gat cct caa act tta tat 528
 Ile Phe Leu Ala Lys Cys Asp Lys Gly Ser Asp Pro Gln Thr Leu Tyr
 165 170 175

gta agc taa 537
 Val Ser

<210> 18

<211> 178

<212> PRT

<213> Chlamydia trachomatis

<400> 18

Met Thr Tyr Ser Ile Ser Asp Ile Ala His Lys Ser Asp Ile Ser Asn
 1 5 10 15

Pro Thr Ser Pro Ala Pro Ser Arg Lys Arg Gly Ser Phe Pro Pro Gln
 20 25 30

Ser Pro Ser Ala Val Gly Ser Leu Glu Gly Ala Asn Phe Ser Thr Trp
 35 40 45

Gly Pro Gly Pro Phe Phe Thr Val Pro Val Tyr Pro Gln Gln Leu Ala
 50 55 60

Ala Met Gln Asn Asn Leu Phe Thr Leu Gln Thr Glu Val Ser Ala Leu
 65 70 75 80

Lys Lys Lys Leu Val Gln Ser Ser Gln Thr Arg Gly Ser Leu Gly Leu
 85 90 95
 Gly Pro Gln Phe Leu Ala Ala Cys Leu Val Ala Ala Thr Ile Leu Ala
 100 105 110
 Val Ala Val Ile Val Leu Ala Ser Leu Gly Leu Gly Gly Val Leu Pro
 115 120 125
 Phe Val Leu Val Cys Leu Ala Gly Ser Thr Asn Ala Ile Trp Ala Ile
 130 135 140
 Val Ser Ala Ser Ile Thr Thr Leu Ile Cys Cys Val Ser Ile Ala Cys
 145 150 155 160
 Ile Phe Leu Ala Lys Cys Asp Lys Gly Ser Asp Pro Gln Thr Leu Tyr
 165 170 175

Val Ser

<210> 19

<211> 22

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: PCR primer

<400> 19

agaaccgatt taactccagg cg

22

<210> 20

<211> 30

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: PCR primer

<400> 20

gcgcgatcc ttaatgtccg gtaggcctag

30

<210> 21

<211> 23

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: PCR primer

<400> 21

atgtcaacaa caccagcatc ttc

23

<210> 22

<211> 34

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: PCR primer

<400> 22

gcgcggatcc ttaattagtg ccttctggat tagg

34

<210> 23

<211> 24

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: PCR primer

<400> 23

cgcagtactg tatccacaga caac

24

<210> 24

<211> 26

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: PCR primer

<400> 24

gtcggatccg agaaactctc catgcc

26